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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,531	07/19/2000	Dr. Werner Groh	032745-023	2261

21839 7590 05/20/2003

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POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

RUDDOCK, ULA CORINNA

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/619,531

Applicant(s)

GROH ET AL.

Examiner

Ula C Ruddock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 16-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. The Examiner has carefully considered Applicant's amendments and accompanying remarks filed February 24, 2003. It should be noted that the Examiner mistakenly added the Schops reference (US 6,235,657) to the 103 rejection of Paper #12, paragraph #3. As a result, the Examiner has deleted the Schops reference from that paragraph. All rejections have been maintained.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1, 2, 4, 7, 8, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel et al. (US 5,171,629) in view of Hartmann et al. (US 4,714,651). Heidel et al. disclose a carrier web consisting of a glass fiber mat and a mat of synthetic fibers (i.e. a nonwoven), which are needled together (abstract). It should be noted that some of the synthetic nonwoven filaments would naturally penetrate through the laminate and emerge at the lower surface. With regard to claim 2, the glass fiber mat is preconsolidated using polymer binders such as melamine resins (col 2, ln 9-17). The synthetic nonwoven fiber can be a polyester fiber (col 2, ln 25-30). With regard to claim 4, the non-woven undergoes pre-consolidation by a calendering process (col 2, ln 46-49). The web can be end-consolidated with a binder (col 2, ln 11-13). Furthermore, Heidel et al. disclose that carrier webs are conventionally end-consolidated (i.e. final consolidation) with an acrylate-butadiene-styrene copolymer (col 1, ln 32-35).

Heidel et al. fail to teach that the glass fiber mat is a woven web or a scrim. Heidel et al. also fail to specifically teach that binder is present in an amount of 5-35% weight percent or 14-18% weight percent based on the total weight of the laminate.

Hartmann et al. (US 4,714,651) disclose high strength roofing materials (abstract).

The material comprises a spunbonded carrier layer of organic materials, such as polyester (col 3, ln 61-64) that can be bonded to at least one further layer of inorganic material (col 2, ln 28-30), for example, woven glass fabrics (col 3, ln 68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used Hartmann's woven glass fabric in place of Heidel's glass fiber mat motivated by the desire to obtain a carrier web with increased dimensional stability and good workability.

With regard to claims 7 and 8, it should be noted that optimizing the amount of binder added to the laminate is a result effective variable. The amount of binder would directly affect the durability of the laminate. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used 5-35% or 14-18% of the styrene binder of Schops et al. on the web of Heidel et al. and Hartmann et al., since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have optimized the amount of binder motivated by the desire to obtain a web with increased durability.

With regard to claims 9 and 10, it is the Examiner's position that the laminate of Heidel et al. and Hartmann et al., is identical to or only slightly different than the claimed laminated web prepared by the method steps present in claims 9 and 10, because both laminates have the same structure, i.e. a laminate having a synthetic nonwoven fabric needled to a woven glass fabric. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its

method of production. If the product in the product-by-process claim is the same as or an obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the Applicant to show unobvious differences between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983).

4. Claims 5, 6, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel et al. (US 5,171,629) and Hartmann et al. (US 4,714,651) as applied to claims 1, 2, 4, and 7-10 above, and further in view of Schops (US 6,235,657). Heidel et al. (US 5,171,629) and Hartmann et al. (US 4,714,651) disclose the claimed invention but fail to disclose that the non-woven layer is pre-consolidated by needling, and that the needling rate is 30-50 stitches/cm². Heidel et al. and Hartmann et al. also fail to disclose that the laminate includes two synthetic non-woven layers and a glass woven web. Heidel et al. and Hartmann et al. also fail to disclose that the woven web includes weft and warp yarns having a titer which differs by at least a factor of 2 and that the nonwoven layers are not preconsolidated. Finally, Heidel et al. and Hartmann et al. fail to disclose that the glass woven web includes both continuous glass filaments and staple fiber yarns.

Schops et al. (US 6,235,657) disclose a laminate with spunbonded (i.e. nonwoven) webs and laid reinforcing components (abstract) that is useful for reinforcing bitumen sheets (col 1, In 6-9). The laminate is joined together by needling at about 20-70 stitches/cm². With regard to claim 11, the laminate can be composed of two web components and a laid layer in between (col 5, In 5-7). The laid yarns can be staple fiber yarns or filament yarns, provided that they possess the

desired combination of breaking strength and breaking extension (col 4, ln 14-17). The nonwoven layer can also be needled (col 5, ln 26-27).

With regard to claims 5 and 6, it would have been obvious to one having ordinary skill in the art to have employed the pre-consolidation needling method of Schops et al. on the nonwoven fabric of Heidel et al. motivated by the desire to obtain a laminate with increased strength. It also would have been obvious to one having ordinary skill in the art to needle together the layers of Heidel et al. and Hartmann et al. at a rate of about 20-70 stitches/cm², as shown by Schops et al., motivated by the desire to obtain a web having substantial mechanical strength.

With regard to claim 11 and 12, it would have been obvious to one having ordinary skill in the art to have used the second synthetic nonwoven layer as taught by Schops et al. in combination with the web of Heidel et al. and Hartmann et al., motivated by the desire to obtain a web having increased reinforcing capabilities. As a result, the laminate would have the three layers as required by the present invention.

Furthermore, with regard to claim 11, it should be noted that optimizing the titer of the weft and warp yarns of the glass fabric of Hartmann et al. is a result effective variable. For example, increasing the titer of a yarn would directly affect the strength of the yarn. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the titer of the warp and weft yarns differ by at least a factor of 2, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have

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optimized the titer of the warp and weft yarns motivated by the desire to obtain a web with increased oriented strength.

In addition, with regard to claim 12, it would have been obvious to one having ordinary skill in the art to have not consolidated the nonwoven fabrics of Heidel et al., Hartmann et al., and Schops et al., motivated by the desire to obtain a web with increased loft.

With regard to claim 13, it would have been obvious to one having ordinary skill in the art to have used Schops' teaching of using both staple fiber yarns and filament yarns in the glass fabric on the woven glass fabric of Hartmann et al. motivated by the desire to obtain a glass fabric possessing the desired combination of breaking strength and breaking extension.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel et al. (US 5,171,629), Hartmann et al. (US 4,714,651), as applied to claims 1, 2, 4, and 7-10 above, and further in view of Baravian et al. (US 5,616,395). Heidel et al. and Hartmann et al. disclose the claimed invention except for the teaching that the synthetic filaments are heat shrunk.

Baravian et al. disclose a textile reinforcement for bituminous roofing (abstract). The reinforcement comprises a needled (col 2, ln 62) nonwoven synthetic fabric (col 3, ln 56-58) bonded to a glass scrim (claim 5). The nonwoven layer is heat shrunk (col 4, ln 12-16). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the heat shrinking method of Baravian et al. on the web of Heidel et al. and Hartmann et al., motivated by the desire to obtain a web that will be flat after consolidation and will not undergo curling.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel et al. (US 5,171,629), Hartmann et al. (US 4,714,651) and Schops et al. (US 6,235,657), as applied to claims 5, 6, and 11-13 above, and further in view of Binnersley et al. (US 4,816,327). Heidel et al., Hartmann et al., and Schops et al. disclose the claimed invention except for the teaching that the weft yarns are tapes.

Binnersley et al. disclose woven fabrics made from impregnated glass fibers in which the weft yarns are tapes (col 2, ln 40-47). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the weft tapes of Binnersley et al. in place of the weft yarns of Heidel et al., Hartmann et al., and Schops et al., motivated by the desire to create a woven fabric having improved cover factor.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel et al. (US 5,171,629) and Hartmann et al. (US 4,714,651), as applied to claims 1, 2, 4, and 7-10 above, and further in view of Johnson (US 5,571,596). Heidel et al. and Hartmann et al. disclose the claimed invention except for the teaching that the woven web contains glass fibers of E, C, mixtures thereof, and ECR fibers. Johnson (US 5,571,596) discloses a roofing shingle including a plain woven E-glass fabric (col 7, ln 5-6). It would have been obvious to one having ordinary skill in the art at the time invention was made to have used the E-glass fibers of Johnson in the web of Heidel et al. and Hartmann et al. motivated by the desire to obtain a web having cheaper processing costs as a result of using inexpensive glass fibers.

Response to Arguments

8. Applicant's arguments filed February 24, 2003, have been fully considered but they are not persuasive for the reasons set forth. Applicant argues that the use of a non-woven glass fiber layer is critical to the invention of Heidel '629 as is the use of a melamine-formaldehyde condensate for final consolidation and that Heidel fails to needle together both layers such that a part of the organic filaments penetrate through the laminate and emerge at the lower surface and lie adjacent thereto. These arguments are not persuasive because Heidel does disclose needling the glass fiber mat and the mat of synthetic fibers (col 2, ln 9-11 and col 3, ln 48-51). Furthermore, it is the Examiner's position that the needled filaments will inevitably penetrate through the laminate and emerge at a lower surface. In addition, the use of acrylate-styrene copolymers is conventional rather than critical as shown in the background of Heidel et al. (col 1, ln 32-35). Therefore, one having ordinary skill would have been motivated to use the styrene copolymer as required by the present invention. Furthermore, while it is Applicant's belief that Hartmann discloses that woven glass fabrics for roofing materials have decided advantages, Hartmann et al. does disclose an improvement with the use of woven fabrics, i.e. good workability during the coating process (col 3, ln 65-68 and col 4, ln 5-10). Therefore, there is motivation to use Hartmann's woven glass fabrics in the carrier web of Heidel et al. Applicant also argues that no motivation exists for replacing the melamine-formaldehyde condensate required by Heidel '629 with the styrene polymer disclosed in Schops '657. This argument is not persuasive because Schops was not used for its teaching of a styrene polymer. The Schops references was used for its teaching that the non-woven layer is pre-consolidated by needling, that the needling rate is 30-50 stitches/cm², that the laminate includes

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two synthetic non-woven layers and a glass woven web and finally, that the glass woven web includes both continuous glass filaments and staple fiber yarns.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ula C. Ruddock whose telephone number is (703) 305-0066. The Examiner can normally be reached Monday through Thursday from 6:30 AM to 5 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor Terrel Morris can be reached at (703) 308-2414.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-2351.

Ula C. Ruddock
Patent Examiner
Art Unit 1771
5/18/03

